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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,012	11/13/2001	Kenichi Watanabe	011264	6363

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EXAMINER

CHU, CHRIS C

ART UNIT PAPER NUMBER

2815

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,012

Applicant(s)

WATANABE, KENICHI

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 21 is/are pending in the application.
- 4a) Of the above claim(s) 2 - 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I and Species V in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Quick review of the claims of instant invention shows that claims 2, 4, 5, 7 and 9 do not belong in Species V. Therefore, Examiner hereby examines claims 1 and 21.

In claim 2, the limitation "a third insulating layer, the wiring patterns and the conductor patterns are disposed in grooves formed through the third and second insulating layers" is not shown in Figs. 6A ~ 6D.

In claim 5, the limitation "each of the wiring patterns and via conductors formed in the circuit area is made of a barrier metal layer covering a continuous inner surface of each of the grooves and holes and an oxidizable metal layer filled in each of the grooves and holes" belongs in Species VI.

Drawings

3. Figures 12A ~ 14B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference numbers “2 and 3” in Fig. 1D and reference number “110” in Figs. 5A ~ 6D are not disclosed in the specification of instant invention. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
5. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Specification

6. The disclosure is objected to because of the following informalities:

On page 10, line 10, "first insulating layer 18" should be --second insulating layer 18--.

On page 24, line 23, "insulting" should be --insulating--.

On page 39, line 17, "layer made" should be --layer 26 made--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

8. Claims 1 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Iguchi.

Regarding claim 1, Iguchi discloses in Fig. 1, Fig. 5(a), Fig. 5(b), Fig. 15 and column 12, lines 14 ~ 22 a semiconductor wafer device comprising:

- a semiconductor wafer (1) having a circuit area disposed in a central area of said semiconductor wafer and a peripheral area of said semiconductor wafer not formed with circuits;
- a number of semiconductor elements (6) formed in the circuit area;
- a multi-layer wiring structure (11 and 10) formed in the circuit area and having multi-layer wirings connected to said semiconductor elements and interlevel insulating films (7 and 8), at least some of the multi-layer wirings being damascene wirings including wiring patterns and via conductors embedded in the interlevel insulating films; and
- a multi-layer structure (21) formed in the peripheral area, having insulating films (7 and 8) made of a same materials as the interlevel insulating films and conductor patterns (the dark and “J” shaped structure in 21) made of same materials as the wiring patterns, and not having conductor patterns corresponding to the via conductors.

Regarding claim 21, Iguchi discloses in Fig. 1, Fig. 5(a), Fig. 5(b), Fig. 15 and column 12, lines 14 ~ 22 a semiconductor wafer device, comprising:

- an underlying structure (1) including a semiconductor wafer;
- a first insulating layer (2) having a lower dielectric constant than silicon oxide and formed over said underlying structure in an area excepting a peripheral area of said underlying structure;
- a second insulating layer (3) having a dielectric constant higher than said first insulating layer and formed on said first insulating layer;

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- wiring grooves (at the place of 5) formed at least through said second insulating layer;
- patterns of conductor filled (6) in said wiring grooves; and
- said second insulating layer or a layer (the dark and “J” shaped structure in 21) of a same material as the conductor covering an outermost side wall of said first insulating layer.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishikawa discloses in column 6, lines 32 ~ 44 silicon oxynitride having a lower dielectric constant than silicon oxide. Further, Iguchi et al., Hasegawa and Jaso et al. disclose a semiconductor wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu
Examiner
Art Unit 2815

c.c.
January 8, 2003



EDWIN LEE
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